

PREPARING YOUR STORMWATER CONTROL O & M PLAN

Appendix

H

How to prepare a customized Stormwater Control Operation & Maintenance Plan for the treatment BMPs on your site.

Stormwater treatment BMPs must be regularly maintained to insure that they continue to be effective and that they do not cause flooding, harbor vectors, or otherwise create a nuisance.

Stormwater NPDES Permit Provision C.3.e requires the City to verify that treatment BMPs are being adequately maintained. The City reports the results of BMP inspections to the Regional Water Quality Control Board once a year.

This Appendix will assist you to prepare a **customized** Operation and Maintenance (O&M) Plan for your site. The purpose of this O&M Plan is to function as an O&M Manual to provide guidance for day-to-day operations and maintenance of stormwater controls onsite. Prepare your O&M Plan concurrent with grading, landscaping, and construction of treatment BMPs.

Your Stormwater Control O&M Plan must be submitted to and approved by the City before your building permit can be made final and a certificate of occupancy issued.

Your O&M Plan must be kept on-site for day-to-day use by maintenance personnel and during site inspections. It is also recommended that a copy of the Stormwater Control Plan be kept onsite as a reference.

1. VERIFICATION PROGRAM OVERVIEW

The City's treatment BMP operation and maintenance verification program includes the following stages:

1. Applicants for planning and zoning approval must confirm, in their **Stormwater Control Plan**, responsibility for operating and maintaining BMPs until that responsibility is transferred.
2. The Stormwater Control Plan includes locations, types, and sizes of proposed treatment BMPs and general information about their operation and maintenance requirements.
3. In the construction documents submitted with application for building permits, the applicant

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identifies the person responsible for preparing a detailed **Stormwater Control Operation and Maintenance Plan**.

4. Treatment BMPs must be maintained during site preparation and construction.
5. Following approval of their planning and zoning application, applicants for building permits prepare a **Stormwater Control Operation and Maintenance Plan**. The Plan must be submitted and approved prior to building permit final and issuance of a certificate of occupancy.
6. Applicants must execute a **Stormwater Management Facilities Operation and Maintenance Agreement**. The standard agreement is Attachment 1 to this Appendix. The agreement runs with the land, and future property owners are obligated to implement its provisions.
7. Property owners must **inspect and maintain BMPs throughout the year**—periodically and following storms—according to the schedule in their approved Stormwater Control Operation and Maintenance Plan.

Property owners must also **retain an inspector acceptable to the City** to inspect the BMPs once a year, and must submit an inspection report to the City along with the fee established by the City's standard fee schedule. Qualification guidelines for inspectors are in **Appendix O**. The City will perform annual inspections; however, the City may accept the property owners' inspection report in lieu of a City inspection if historical City inspections demonstrate consistently acceptable operation and maintenance of BMPs. City inspectors may also visit the site to verify proper operation and maintenance of stormwater treatment BMPs.

See **Chapter 6** for a detailed description of the process for planning treatment BMP operation and maintenance.

2. O&M PLAN OVERVIEW

► **PURPOSES AND USERS**

Your Stormwater Control O&M Plan should:

- ◆ Function as an O&M Manual to provide guidance for day-to-day operations and maintenance of stormwater controls onsite.
- ◆ **Document** the design parameters, features, methods and materials of construction, intended mode of operation, and other key characteristics.
- ◆ Set forth a detailed **maintenance program and schedule** to ensure that it continues to operate as intended.
- ◆ Anticipate potential problems or failures and provide instructions for **troubleshooting**.
- ◆ Provide a reference and checklists to be used during verification **inspections**.

The primary audience for your O&M Plan is facility maintenance staff, including those responsible for supervising landscape and/or mechanical maintenance. The focus should be on creating easy-to-follow step-by-step instructions for implementing and document maintenance activities.

The secondary audience is City staff, Regional Water Quality Control Board staff, and others who may be responsible for verifying maintenance.

► O & M OUTLINE AND CONTENTS

TABLE H-1 O & M Plan Outline and Contents

- I. Inspection and Maintenance Log (Attachment 4)
- II. Updates, Revisions and Errata
- III. Introduction
 - A. Narrative overview describing the site; drainage areas, routing, and discharge points; and treatment BMPs
- IV. Responsibility for Maintenance
 - A. General
 - 1. Name and contact information for responsible individual(s).
 - 2. Organization chart or charts showing organization of the maintenance function and location within the overall organization.
 - 3. Reference to O & M Agreement (to be attached, see item VIII).
 - 4. Maintenance Funding
 - a. Sources of funds for maintenance
 - b. Budget category or line item
 - c. Description of procedure and process for ensuring adequate funding for maintenance
 - B. Staff Training Program
 - C. Records
 - D. Safety
- V. Summary of Drainage Areas and BMPs
 - A. Drainage Areas
 - 1. Drawings showing pervious and impervious areas (copied or adapted from Stormwater Control Plan)
 - 2. Designation and description of each drainage area and how flow is routed to the corresponding BMP.
 - B. Treatment BMPs
 - 1. Drawings showing location and type of each BMP
 - 2. General description of each BMP (Consider a table if more than two BMPs)
 - a. Area drained and routing of discharge.
 - b. BMP type and size
- VI. BMP Design Documentation
 - A. “As-built” drawings of each BMP
 - B. Manufacturer’s data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment, and proprietary BMPs.
 - C. Specific operation and maintenance concerns and troubleshooting
- VII. BMP Maintenance Schedule
 - A. Summary Annual Maintenance Schedule for All BMPs (combined)
 - B. Inspection and Maintenance Schedule for Each BMP (see Step 4 below), including checklists for:
 - 1. Routine inspection and maintenance
 - 2. Annual inspection and maintenance
 - 3. Inspection and maintenance after major storms
 - C. Service Agreement Information
- VIII. Copy of O & M Agreement

3. TOOLS AND ASSISTANCE

The City of Milpitas has compiled and formatted text, tables, and detailed step-by-step instructions to help you prepare your Stormwater Control Operation and Maintenance Plan. You may use, adapt, and assemble these documents to prepare your own Plan which will be customized to the specific needs of your site.

These include:

- ◆ A standard “Stormwater Management Facilities Operation and Maintenance Agreement” (**Attachment 1**).
- ◆ A form for stating or updating key contact information (**Attachment 2**).
- ◆ An example Inspection and Maintenance Log (**Attachment 3**).
- ◆ A format for an independent inspector’s annual inspection report (**Attachment 4**).
- ◆ O&M Fact Sheets, developed by the California Association of Stormwater Quality Agencies for 15 BMPs (available in the Municipal Handbook at www.cabmphandbooks.org) and O&M Fact Sheets for 6 additional BMPs developed by SCVURPPP.
- ◆ Additional useful references, including links to additional documents available on the web (in the bibliography).

4. STEP BY STEP

The following step-by-step guidance will help you prepare each required section of your Stormwater Control Operation and Maintenance Plan.

Preparation of the plan will require familiarity with your BMPs as they have been constructed and a fair amount of “thinking through” plans for their operation and maintenance. The text and forms provided here will assist you, but are no substitute for thoughtful planning.

5. STEP 1: RESPONSIBLE INDIVIDUALS

► **DESIGNATE RESPONSIBLE INDIVIDUALS**

To begin creating your O&M Plan, your organization must designate and identify:

- ◆ The individual who will have direct responsibility for the maintenance of stormwater controls. This individual should be the designated contact with the City’s BMP inspectors and should sign self-inspection reports and any correspondence with the City regarding verification inspections.
- ◆ Employees or contractors who will report to the designated contact and are responsible for carrying out BMP operation and maintenance.

- ◆ The corporate officer authorized to negotiate and execute any contracts that might be necessary for future changes to operation and maintenance or to implement remedial measures if problems occur.
- ◆ Your designated respondent to problems, such as clogged drains or broken irrigation mains, that would require immediate response should they occur during off-hours.

► **LIST CONTACT INFORMATION**

List the contact information for each designee on the form provided (Attachment 2). Include this form directly in Section 2 of your O&M Plan.

Updated contact information must be provided to the City immediately whenever a property is sold and whenever designated individuals or contractors change.

Complete a new Attachment 2 and add it to Section 1—and mail or fax a copy to the City—whenever this occurs.

► **ORGANIZATION CHART**

Draw or sketch an organization chart to show the relationships of authority and responsibility between the individuals responsible for O&M. This need not be elaborate, particularly for smaller organizations.

► **FUNDING FOR O & M**

Describe how funding for BMP operation and maintenance will be assured, including sources of funds, budget category for expenditures, process for establishing the annual maintenance budget, and process for obtaining authority should unexpected expenditures for major corrective maintenance be required.

► **STAFF OR CONTRACTOR TRAINING**

Describe how your organization will accommodate initial training of staff or contractors regarding the purpose, mode of operation, and maintenance requirements for the BMPs on your site. Also, describe how your organization will ensure ongoing training as needed and in response to staff changes.

6. STEP 2: SUMMARIZE DRAINAGE AND BMPS

Your Stormwater Control Plan, prepared and submitted with the planning and zoning application for your project, contains information that will be needed for maintenance or future renovation of the BMPs on your site.

Incorporate the following into your O&M Plan:

- ◆ Figures delineating and designating pervious and impervious areas.
- ◆ Figures showing locations of BMPs on the site.
- ◆ Tables of pervious and impervious areas served by each BMP.

Review the Stormwater Control Plan narrative that describes each BMP and its tributary drainage area and update the text to incorporate any changes that may have occurred during planning and zoning review, building permit review, or construction. Incorporate the updated text into your O&M Plan.

7. STEP 3: DOCUMENT BMPS "AS BUILT"

Include the following information from final construction drawings:

- ◆ Plans, elevations, and details of all BMPs. Annotate if necessary with designations used in the Stormwater Control Plan.
- ◆ Design information or calculations submitted in the detailed design phase (i.e., not included in the Stormwater Control Plan)
- ◆ Specifications of construction that are particular to BMPs, including sand or soil, compaction, pipe materials and bedding.

Note field changes to design drawings, including changes to any of the following:

- ◆ Location and layouts of inflow piping, flow splitter boxes, and piping to off-site discharge
- ◆ Depths and layering of soil, sand, or gravel
- ◆ Placement of filter fabric or geotextiles
- ◆ Changes or substitutions in soil or other materials.
- ◆ Natural soils encountered (e.g. sand or clay lenses)

8. STEP 4: PREPARE CUSTOMIZED MAINTENANCE PLANS

Prepare a maintenance plan, schedule, and inspection checklists (routine, annual, and after major storms) for each BMP. Plans and schedules for two or more similar BMPs on the same site may be combined.

Use the following resources to prepare your customized maintenance plan, schedule, and checklist:

- ◆ Specific information noted in Steps 2 and 3, above.
- ◆ Other input from the BMP designer, city staff, or other sources.
- ◆ BMP Operation and Maintenance Fact Sheets by CASQA and SCVURPPP.

Note any particular characteristics or circumstances that could require attention in the future, and include any troubleshooting advice.

Also include manufacturer's data, operating manuals, and maintenance requirements for any:

- ◆ Pumps or other mechanical equipment.
- ◆ Proprietary devices used as BMPs.

Manufacturers' publications should be referenced in the text (including models and serial numbers where available). Copies of the manufacturers' publications should be included as an attachment in the back of your O&M Plan or as a separate document.

9. STEP 5: COMPILE O&M PLAN

Assemble and make copies of your O&M Plan. **The City requires that the O&M Plan be submitted in a 3-ring loose-leaf binder with appropriately labeled tabs for each section.** Two copies must be submitted to the City (Building Division for Engineering review and approval), and at least one copy kept on-site. Here are some suggestions for formatting the O&M Plan:

- ◆ Include the revision date in the footer on each page.
- ◆ Scan graphics and incorporate with text into a single electronic file. Keep the electronic file backed-up so that copies of the O&M Plan can be made if the hard-copy is lost or damaged.

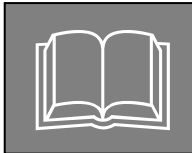
10. STEP 6: UPDATES

Your Stormwater Control Operation and Maintenance Plan will be a **living document**.

Operation and maintenance personnel may turn over; mechanical equipment may be replaced, and additional maintenance procedures may be needed as staff gains experience and equipment ages. Throughout these changes, the O&M Plan must be kept up-to-date.

Updates may be transmitted to the City at any time. However, at a minimum, updates to the O&M Plan must accompany the annual inspection report. These updates should be placed in reverse chronological order (most recent at the top) in Section 1 of the binder. If the entire O&M Plan is updated, as it should be from time to time, these updates should be removed from the first section, but may be filed (perhaps in the back of the binder) for possible future reference.

Annual inspection reports and updates must be 3-hole punched.



References and Resources

- RWQCB Order 01-119, Provision C.3.e
- C.3 Stormwater Handbook: Guidance for Implementing Stormwater Requirements for New and Redevelopment Projects, Final Draft, June 2004. Santa Clara Valley Urban Runoff Pollution Prevention Program.
- Start at the Source (BASMAA, 1999) pp. 139-145.
- Urban Runoff Quality Management (WEF/ASCE, 1998). pp 186-189.
- Stormwater Management Manual (Portland, 2002). Chapter 6.0.
- California Storm Water Best Management Practice Handbooks (CASQA, 2003) Fact Sheets
 - Bioretention
 - Drain Insert
 - Extended Detention Basin
 - Infiltration Basin
 - Infiltration Trench
 - Multiple Systems
 - Media Filter (TC40)
 - Media Filter (MP40)
 - Retention/Irrigation
 - Vegetated Buffer Strip
 - Vegetated Swale
 - Vortex Separator
 - Water Quality Inlet
 - Wet Pond
 - Wet Vault
 - Wetland
- SCVURPPP Operation & Maintenance Fact Sheets:
 - Exfiltration Trench
 - Hydrodynamic Separators
 - Planter Boxes
 - Porous Pavement
 - Roof Gardens

Underground Detention Systems

All fact sheets can be accessed at: http://www.scvurppp-w2k.com/Treatment_Control_BMPs.htm

- Best Management Practices Guide (Public Telecommunications Center for Hampton Roads, 2002).
- Operation, Maintenance and Management of Stormwater Management (Watershed Management Institute, 1997). Order Form.
- Georgia Stormwater Manual Structural Control Maintenance Checklists. Atlanta Regional Commission, 2001. www.georgiastormwater.com

Control No. XXXX.XXX

Recording requested by:

City of Milpitas

When recorded mail to:

City of Milpitas

City Engineer's Office

455 E. Calaveras Blvd.

Milpitas, Ca 95035

Record without fee under Section

6103-Government Code, State of
California

ATTACHMENT 1

STORMWATER MANAGEMENT FACILITIES OPERATION AND MAINTENANCE AGREEMENT

This Stormwater Management Facilities Operation and Maintenance Agreement ("AGREEMENT") is made and entered into this _____ day of _____, 20____, by and between _____, (hereinafter referred to as "Property Owner") and the City of Milpitas, a municipal corporation of the State of California ("City").

RECITALS:

This AGREEMENT is made and entered into with reference to the following facts:

WHEREAS, the Permanent Stormwater Pollution Prevention Measures installed (hereinafter referred to as "BMPs" (Best Management Practices)) must be maintained for the development called, _____, located at _____, MILPITAS, Santa Clara County, State of California and more particularly described on Exhibit A attached hereto and incorporated herein by reference (the "property"); and,

WHEREAS, the Property Owner is the owner of real property more particularly described on the attached as Exhibit A; and,

WHEREAS, the City's Stormwater and Urban Runoff Pollution Control Ordinance requires proper operation and maintenance of the BMPs constructed on this property; and,

WHEREAS, the development conditions of approval require that BMPs, as shown on the approved Stormwater Control Plan be constructed and properly operated and maintained by the Property Owner; and,

WHEREAS, the City has approved the Stormwater Control Operation and Maintenance Plan prepared by _____ on the day of _____, 20____, as this Plan may be subsequently modified from time to time with City's approval; and,

WHEREAS, the Stormwater Control Operation and Maintenance Plan includes an annual inspection checklist for the BMPs constructed on this property, and,

WHEREAS, this Agreement memorializes the Property Owner's maintenance, operations, and inspection obligations under the City's Ordinance and the approved Plans.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

SECTION 1

Responsibility for Operation and Maintenance: The Property Owner will make available copies of the approved Stormwater Control Plan and approved Stormwater Control Operation and Maintenance Plan (hereinafter the "Plans") at the site with the facility or property manager and must maintain the BMPs in good working condition acceptable to the City for the life of the project, and in compliance with the Ordinance and the approved Plans.

SECTION 2

Inspection by Property Owner: The Property Owner, at its own expense, shall conduct annual inspections during the month of _____ or _____ of each year. The annual inspection report shall include completion of the checklist described in the approved Stormwater Operation and Maintenance Plan. The BMPs must be inspected by a qualified independent inspector who is acceptable to the City. The Property Owner must submit the Inspection Report on these BMPs to the City Engineer within 30 days after each inspection. The Annual Inspection Report submitted shall be accompanied by a nonrefundable processing fee per the City's standard fee schedule.

SECTION 3

Facility Inspection by the City: The Property Owner grants permission to the City, its authorized agents and employees, to enter the property, and to inspect the BMPs whenever the City deems necessary to enforce provisions of the City's Stormwater and Urban Runoff Pollution Control Ordinance. The City may enter the premises at any reasonable time to inspect the premises and BMP operation, to inspect and copy records related to storm water compliance, and to collect samples and take measurements. Whenever possible, the City will provide notice prior to entry.

SECTION 4

Failure to Perform Required Facility Repairs or Maintenance by the Property Owner: If the Property Owner, or its successors fail to maintain the BMPs in good working order and in accordance with the approved Plans and the City's Ordinance, the City, with prior notice, may enter the property to return the BMPs to good working order. The City is under no obligation to maintain or repair the BMPs, and this Agreement may not be construed to impose any such obligation on the City. If the City, under this section takes any action to return the BMPs to good working order, the Property Owner shall reimburse the City for all the costs incurred by the City. The City will provide the Property Owner with an itemized invoice of the City's costs and the Property Owner will have 30 days to pay the invoice. If the Property Owners fails to pay the invoice within 30 days, the City may secure a lien against the real property of the Property Owner in the amount of such costs. This Section 4 does not prohibit the City from pursuing other legal recourse against the Property Owner.

SECTION 5

Successors and Assigns: This Agreement applies to the Property Owner and its successors. This agreement runs with the land and imposes a continuing obligation on anyone who owns the property. Upon transfer of the property, the Property Owner shall provide the new owner with the current Plans.

SECTION 6

Indemnity: The Property Owner indemnifies and holds harmless the City and its authorized agents and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the City from the construction, presence, existence or maintenance of the BMPs by the Property Owner, or from any personal injury or property damage that may result from the City entering the property under Section 4. If a claim is asserted against the City, its authorized agents or employees, the City shall promptly notify the Property Owner and the Property Owner shall defend the claim and any resulting litigation at its own expense. If any judgment is entered against the City, or its authorized agents or employees, the Property Owner must pay all costs and expenses to satisfy the judgment.

SECTION 7

Severability: Invalidation of any one of the provisions of this Agreement shall in no way effect any other provisions and all other provisions shall remain in full force and effect.

PROPERTY OWNER'S NAME:

By: _____
print name:
print title:

CITY OF MILPITAS, A MUNICIPAL CORPORATION:

By: _____	By: _____
City	City
Engineer as to content	City Attorney as to form

By: _____
City Manager

ALL PURPOSE ACKNOWLEDGMENT

State of California)
) s.s.
County of _____)

On _____, before me,
_____, personally appeared

_____ personally known to me;
 _____ or proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal. (SEAL)

Signature of Notary Public

CAPACITY CLAIMED BY SIGNER:

Though statute does not require the notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

_____ Individual(s)
 _____ Corporate Officer(s) Titles _____ and _____
 _____ Partner(s) _____ Limited _____ General
 _____ Attorney-in-Fact
 _____ Trustee(s)
 _____ Guardian/Conservator
 _____ Other :

Signer is representing: _____

ATTENTION NOTARY: Although the information requested below is optional, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or type of document _____
 Number of pages: _____ Date of document: _____
 Signer(s) other than named above: _____

**THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED
ABOVE**

EXHIBIT A
Legal Description

ATTACHMENT 2 CONTACT INFORMATION FORM

Designation of Individuals Responsible for Stormwater Treatment BMP Operation and Maintenance	
Date Completed	
Facility Name	
Facility Address	
Designated Contact for Operation and Maintenance	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Off-Hours or Emergency Contact	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Corporate Officer (authorized to execute contracts with the City)	
Name:	Title or Position:
Address:	
Telephone:	Alternate Telephone:
Email:	

ATTACHMENT 3
STORMWATER BMP INSPECTION AND MAINTENANCE LOG

Facility Name
Address
<div style="display: flex; justify-content: space-between;"> Begin Date End Date </div>

Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the City, and start a new log at that time.

- BMP ID# — Always use ID# from the Operation and Maintenance Manual.
- Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.
- Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.
- Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.
- Comments and actions taken — Describe any maintenance done and need for follow-up.

ATTACHMENT 4
ANNUAL INSPECTION REPORT FORMAT

- I. General
 - A. Date and time of site visit
 - B. Reason for inspection (e.g., routine/annual, follow-up, by City request, or response to complaint)
 - C. Weather/rainfall
 - D. Personnel participating
 - E. Ability to obtain access to the site
- II. Review of Stormwater Control Operation and Maintenance Plan
 - A. Ability to obtain and review on-site copy of plan
 - B. Date of last update to plan
 - C. Sections out-of-date and updates needed
 - 1. Contact information for site personnel
 - 2. Information on BMPs
 - 3. Records of previous inspections
 - D. Review of maintenance logs
 - 1. Comparison to maintenance schedule. Note exceptions.
- III. Results of Site Inspection
 - A. Overall condition of site and any exceptional circumstances (e.g., construction in progress, flooding)
 - B. For each BMP listed in the Stormwater Control Operation and Maintenance Plan
 - 1. Items inspected
 - 2. Exceptions noted
 - 3. Corrective actions needed
 - a. Exceptions not affecting BMP performance (correct and re-inspect in one year)
 - b. Exceptions affecting BMP performance (correct and re-inspect immediately)
- IV. Compliance Status
 - A. In compliance—no corrective actions required, or
 - B. In compliance—implement corrective actions and re-inspect in one year, or
 - C. Not in compliance—implement corrective actions and re-inspect
- V. Summary and Recommendations
 - A. Note any required follow-up and schedule re-inspection if necessary